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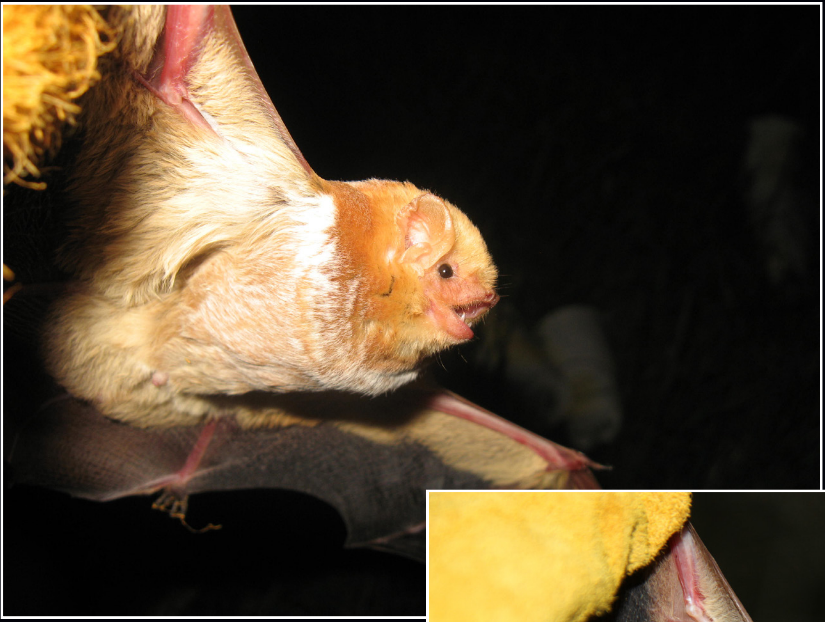

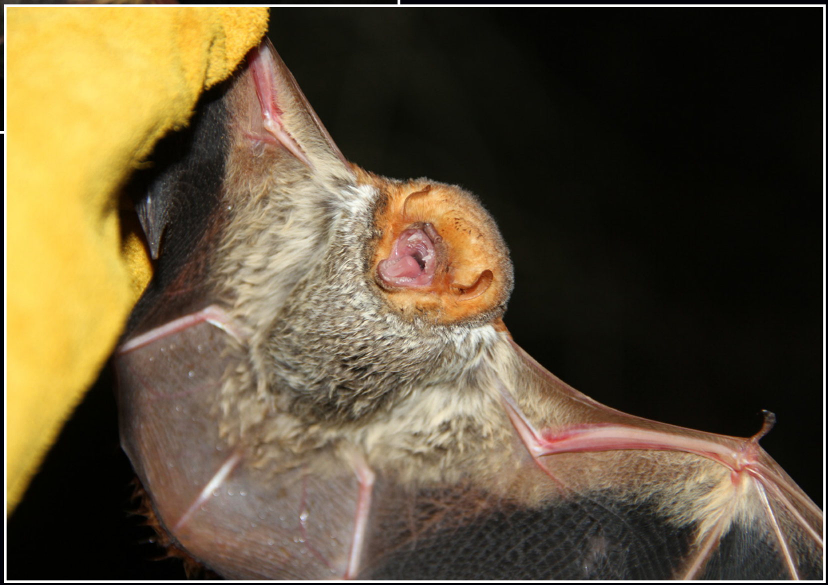

First Records of the Eastern Red Bat (*Lasiurus borealis*) in Arizona, Utah, and Western New Mexico

Front cover: Ventral coloration in an Eastern Red Bat (*Lasiurus borealis*) on the left and Western Red Bat (*Lasiurus frantzii*) on the right. Eastern Red Bats have an overall reddish color to the ventral side compared to an overall darker coloration of Western Red Bats.

First Records of the Eastern Red Bat (*Lasiurus borealis*) in Arizona, Utah, and Western New Mexico

Keith Geluso and Ernest W. Valdez

Abstract

The red bat once was considered a single species with two subspecies in the United States. This taxon now is split into the Eastern Red Bat (*Lasiurus borealis*) and Western Red Bat (*Lasiurus frantzii*, formerly *L. blossevillii*). Due to generally perceived non-overlapping ranges in the United States and Canada, researchers likely have relied on distribution for identification of these similar-appearing migratory species. This study examined red bat specimens housed at the Museum of Southwestern Biology (University of New Mexico, Albuquerque) as well as a few other specimens in natural history museums from the southwestern United States. Herein, the first state records of Eastern Red Bats are reported from Arizona and Utah, as well as the westernmost record from New Mexico. Such records extend the known distribution of Eastern Red Bats farther west then previously recognized in the southwestern United States. In contrast, the seeming distribution for Western Red Bats is reduced in Utah by our findings. Identification of a red bat from south-central New Mexico was reexamined for which identification has been in question for years. To assist researchers, an external morphological difference in fur coloration was described herein to aid in the identification of these two species in the future. Our study brings into question the identification of red bats formerly captured in the western United States, as our "new" records from Utah were collected in 1937 and 1991, and the "new" record from Arizona was from 1954. All red bats, including recent captures and museum specimens, from west of the Rocky Mountains need to be examined closely in light of our findings. Recognizing how to identify these similar species will allow researchers to better understand their distribution, abundance, and migratory patterns, as well as provide better accuracy in call libraries for acoustic monitoring.

Key words: Arizona, distribution, Eastern Red Bat, *Lasiurus frantzii*, *Lasiurus blossevillii*, *Lasiurus borealis*, migratory, New Mexico, state record, Western Red Bat, Utah

Introduction

Two species of red bats occur in the United States, Canada, and Mexico—the Eastern Red Bat, *Lasiurus borealis* (Müller, 1776) and the Western Red Bat, *L. frantzii* (Peters, 1870), formerly referred to as *L. blossevillii* (Morales and Bickham 1995; Harvey et al. 2011; Bradley et al. 2014; Baird et al. 2015). In the United States and Canada, Western Red Bats currently are known from western Texas, southwestern New Mexico, Arizona, Utah, Nevada, and California (Hall 1981; Nagorsen and Paterson 2012). Eastern Red Bats generally occur east of the Rocky Mountains to the Atlantic coast from Texas and New Mexico northward to Montana and southwestern Canada (Hall 1981; Shump and Shump 1982; Nagorsen and Paterson 2012). Both species are migratory and generally roost in the foliage of trees (Shump and Shump 1982; Cryan 2003). Due to long-distance seasonal movements, extralimital records beyond established distributions are likely and already known for various other migratory bat species, such as the Hoary Bat, *Aeorestes cinereus* (Palisot de Beauvois, 1796), Seminole Bat, *Lasiurus seminolus* (Rhoads, 1895), Evening Bat, *Nycticeius humeralis* Rafinesque, 1819, and Brazilian Free-tailed Bat, *Tadarida brasiliensis* (I. Geoffroy 1824) in the United States (e.g., see Brant and Dowler 2000, Genoways et al. 2000, Cryan 2003, Andersen et al. 2017). To date, Eastern Red Bats are not known from western parts of the United States, west of the Rocky Mountains or in the Southwest to the Pacific Coast.

Western Red Bats once were considered a subspecies (*L. borealis telotis*) of Eastern Red Bats due to similar morphology (Hall 1981; Shump and Shump 1982) but were split into two species based on molecular data (Baker et al. 1988; Morales and Bickham 1995). Distinguishing Eastern Red Bats from Western Red Bats via external characteristics is difficult where distributions overlap or approach one another (e.g., Valdez et al. 1999; Ammerman et al. 2012), albeit cranial measurements can be used to distinguish the two species (Schmidly and Hendricks 1984). Due to generally non-overlapping distributions and similar external features, identification of extralimital observations likely has been indiscriminate. Historically, researchers likely relied on distribution for identification, as the two species are not known to be sympatric except potentially in western Texas and north-central Mexico (Genoways and Baker 1988). Herein, the first state records of Eastern Red Bats are reported from Arizona and Utah, as well as the westernmost record of an Eastern Red Bat from New Mexico. The identification of a museum specimen from south-central New Mexico also was reexamined to clarify the distribution of Eastern Red Bats in the state. An external morphological trait was described herein to help researchers identify these two similar species in the future.

Methods

In an attempt to improve the identification of these two species in New Mexico associated with our continued research on bats in the state, museum skins of Eastern Red Bats (n = 26) and Western Red Bats (n = 42) were examined from across the United States housed at the Museum of Southwestern Biology (MSB), University of New Mexico, Albuquerque (samples sizes do not include the three specimens in question discussed below). Upon observing a potential difference in fur coloration on standard study skins between the two species, examination of skull characteristics and molecular sequence data was used for select individuals to help confirm identification of red bat specimens at MSB.

Examination of specimens at MSB yielded three specimens for which identification was questioned based on coloration of their ventral side: a male Western Red Bat from Coconino County, Arizona, captured on 29 July 1954 (MSB 161561, formerly in the University of Illinois Museum of Natural History as specimen 8439); a male Western Red Bat from Doña Ana County, New Mexico, captured on 30 June 1966 (MSB 30894); and a male Eastern Red Bat (MSB 296442; see Geluso 2016) from western New Mexico that one of us (KG) captured in Grant County on 20 May 2015. This last individual possessed fur coloration of an Eastern Red Bat on the basis of our newly suspected trait, although only Western Red Bats previously were known from the area (Findley et al. 1975).

Additionally, Western Red Bats are known from northern Utah (Durrant 1952; Barbour and Davis 1969; Oliver 2000; Adams 2003; Harvey et al. 2011). The identification of those specimens/captures has been questionable for us for years based on the disjunct nature of records (e.g., see Adams 2003:155). Two voucher specimens known from northern Utah were located and requested to determine their identification (see Oliver 2000). One specimen was housed in the natural history collection at California State University, Long Beach (mammal specimen #156; Kenilworth, Carbon County, Utah, 17 September 1937, male). The voucher consisted of a standard study skin only. The other specimen was maintained at the M. L. Bean Life Science Museum, Brigham Young University (BYU), Provo, Utah (specimen #13319; Springville, Utah County, Utah, 28 October 1991, male). This voucher consisted of a standard study skin and skull.

As a reference for size, a number of skull and skin measurements were either taken by us or obtained from study skins. Measurements were taken with digital dial calipers (resolution 0.01 mm) from all male Eastern (n = 5) and male Western Red Bats (n = 8) housed at MSB, as all five red bat specimens in question in this study were males (Appendix). Past researchers noted that cranial measurements of Western Red Bats were smaller than those of Eastern Red Bats (Miller 1897; Schmidly and Hendricks 1984). Greatest skull length (GSL) was measured from posterior end of occipital to anterior end of premaxilla and did not include teeth. Maxillary toothrow was measured from posterior border of upper M3 to anterior border of canine. Width of upper last molar (M3) and upper first molar (M1) were measured from widest breath of lateral to lingual aspect of teeth. Zygomatic breadth was measured as greatest width across lateral borders of zygomatic processes. Dentary length was measured from posterior border of mandible to anterior border of dentary (not including incisors). Forearm lengths from dried specimens were measured as maximal length of bones. Total length of skin and tail was taken from measurements recorded on skin tag by collector.

For genetic analyses of the five specimens in question, tissue samples (approximately 4 x 4 mm) were obtained from wing membranes and sent to the Bat Ecology and Genetics Laboratory at Northern Arizona University, Flagstaff for genetic analysis. The laboratory used COI DNA mini-barcode methodology to attempt to distinguish the species as described in Walker et al. (2016).

Results and Discussion

Comparison of specimens demonstrated that Eastern Red Bats possess a band of red fur throughout their neck, chest, and abdomen near the distal margins of hairs below the white tips (Figs. 1 and 2). In contrast, Western Red Bats contain a band of black to dark brown fur on their neck, chest, and abdomen near the tips of hair but below the yellowish to whitish ends, giving the ventral side a darker appearance (Figs. 1 and 3). Examination of pelages revealed the five specimens in question all possessed a red band of fur on the ventral side near the neck, chest, and abdomen (Fig. 2), suggesting all bats in question are Eastern Red Bats. This trait can be observed on live individuals, but museum skins also demonstrate this trait (Figs. 1–3). This subtle external characteristic was the trait originally used by us to distinguish between the two species, yielding our three questionably identified bats from Arizona and New Mexico housed at MSB. A few specimens of red bats at MSB had worn pelage or coloration altered during preparing or housing specimens, and thus, it was difficult to determine identification via this characteristic ($n \leq 3$).

Of specimens in question with skulls, all four individuals had skull measurements that best matched Eastern Red Bats, with overall larger measurements than Western Red Bats for the males examined in this study (Table 1). Greatest skull length, maxillary toothrow, and dentary length for bats in question generally were in the range of measurements for Eastern Red Bats and not within the range of reference male Western Red Bats (Table 1). Width of upper 3rd molar for specimens in question also best matched measurements of Eastern Red Bats (Table 1). There were a number of characteristics for reference specimens that showed no separation in measurements between the two species, such as zygomatic breadth, forearm length, total length of skin, and tail length, which did not aid in identification (Table 1).

Only two of the five bats in question yielded molecular sequence data (NM: Grant Co., an Eastern Red Bat; and UT: Utah Co., an Eastern Red Bat), thus further confirming identification as Eastern Red Bats with use of external fur coloration trait and skull characteristics. It is unclear why molecular sequences were not obtained from the other three specimens; those specimens failed to yield sequence data multiple times with two different samples of tissues analyzed from each specimen. Those specimens were the oldest of our sample, but not as old as the 1905 specimen from which Nagorsen and Paterson (2012) obtained genetic sequences. Despite the lack of genetic data for three specimens, the cumulative data suggest that all five specimens in question are best referred to as Eastern Red Bats, modifying the known distributions for both species in the southwestern United States.

Other traits have been used to distinguish between Eastern Red Bats and Western Red Bats, such as skull profile, subtle differences in reddish coloration, a frosted appearance or not, and fur quantity on uropatagium (e.g., Miller 1897; Adams 2003; Ammerman et al. 2012; Morgan et al. 2019). Although not stated explicitly, Miller (1897:111) diagramed the skull profile of Western Red Bats with a pronounced angle. Miller (1897) portrayed that from the back of the cranium for about half the profile, the cranium is rather flat on the

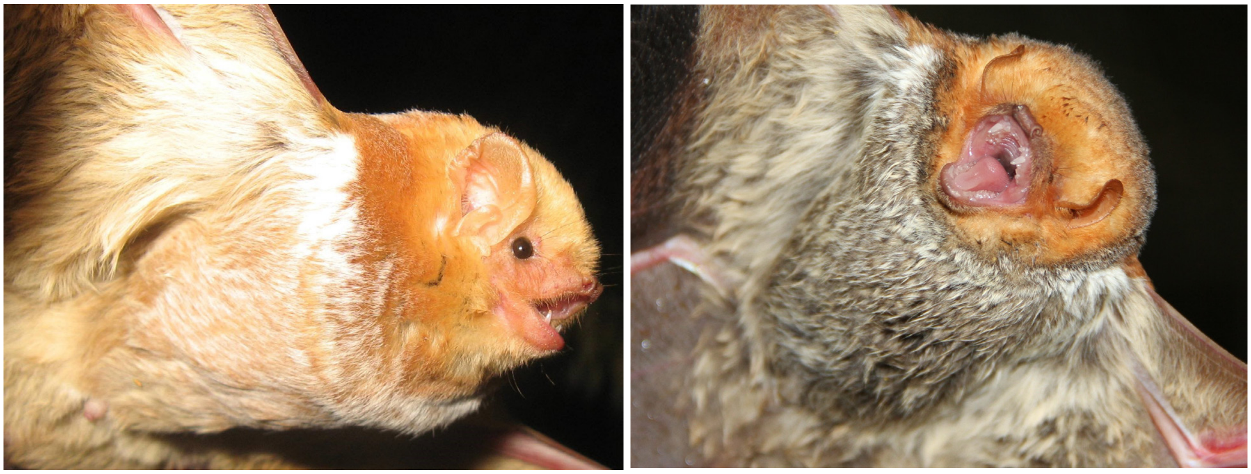

Figure 1. Ventral coloration in an Eastern Red Bat (*Lasiurus borealis*) on the left and Western Red Bat (*Lasiurus frantzii*) on the right. Eastern Red Bats have a band of reddish fur below the white tips on the, neck, chest, and abdomen, whereas Western Red Bats have a band of black to dark brown fur below light-colored tips of hair on the chest and abdomen. Eastern Red Bats have an overall reddish color to the ventral side compared to an overall darker coloration of Western Red Bats.

top, then moving anteriorly the forehead yields a steep slope to the front of the cranium, creating an obvious angle. For Eastern Red Bats, his diagram demonstrates one gradual continuous slope from the back to the front of the cranium. Western Red Bats at MSB consistently had this angular profile. Many Eastern Red Bats at MSB had a gradual slope, but there was a number of Eastern Red Bats with a slight to distinct angle, as portrayed by Miller (1897) for Western Red Bats. Of the four specimens in question with skulls available, one had a gradual slope (AZ: Coconino Co.), two had a slight angle (NM: Grant Co. and UT: Utah Co.), and one had a distinct angle (NM: Doña Ana Co.), suggesting this trait is not as useful as fur coloration or cranial measurements in distinguishing these species.

For the remaining few characteristics commonly used to differentiate between species (e.g., Adams 2003, Morgan et al. 2019), skins of red bats were examined at MSB, but no attempt was made to quantify such differences quantitatively, as this was not the objective of this project. Such observations help to understand the confusion and troubles for decades in distinguishing between these two species. Both Ammerman et al. (2012) and Morgan et al. (2019) state that Eastern Red Bats have "color reddish with frosted appearance resulting from white-tipped hairs," whereas Western Red Bats have "color rusty-red to brownish without frosted appearance;" however, photographs in Ammerman et al. (2012:123 and 126) show white-tipped hairs on both species. Observations of skins at MSB demonstrated that male Eastern Red Bats generally have a darker brick-red coloration than females and females tend to be lighter reddish color. For Western Red Bats at MSB, most specimens were of reddish coloration but some were extremely pale to almost white. Additionally, individuals of both species commonly had white-tipped hairs. There was a trend that some Western Red Bats lacked white-tipped hairs but most specimens were frosted. Thus, such variation in "reddish" coloration and frequent frosted appearance does not lend well as distinguishing characteristics.

A number of keys use how much of the uropatagium is fully furred to distinguish between the species (Adams 2003; Ammerman et al. 2012; Morgan et al. 2019). At MSB, Eastern Red Bats had fully or densely furred uropatagium all the way to the trailing edge, whereas the lower one-third of the uropatagium for Western Red Bats tended to be less sparely furred, however, there was overlap. With use of museum specimens, quality of the preparation and how much the uropatagium was pinned out also yielded it difficult to observe such a trait. As with the identification of many similar-looking species, a host of traits and prior experience with the species' aids in identifica-

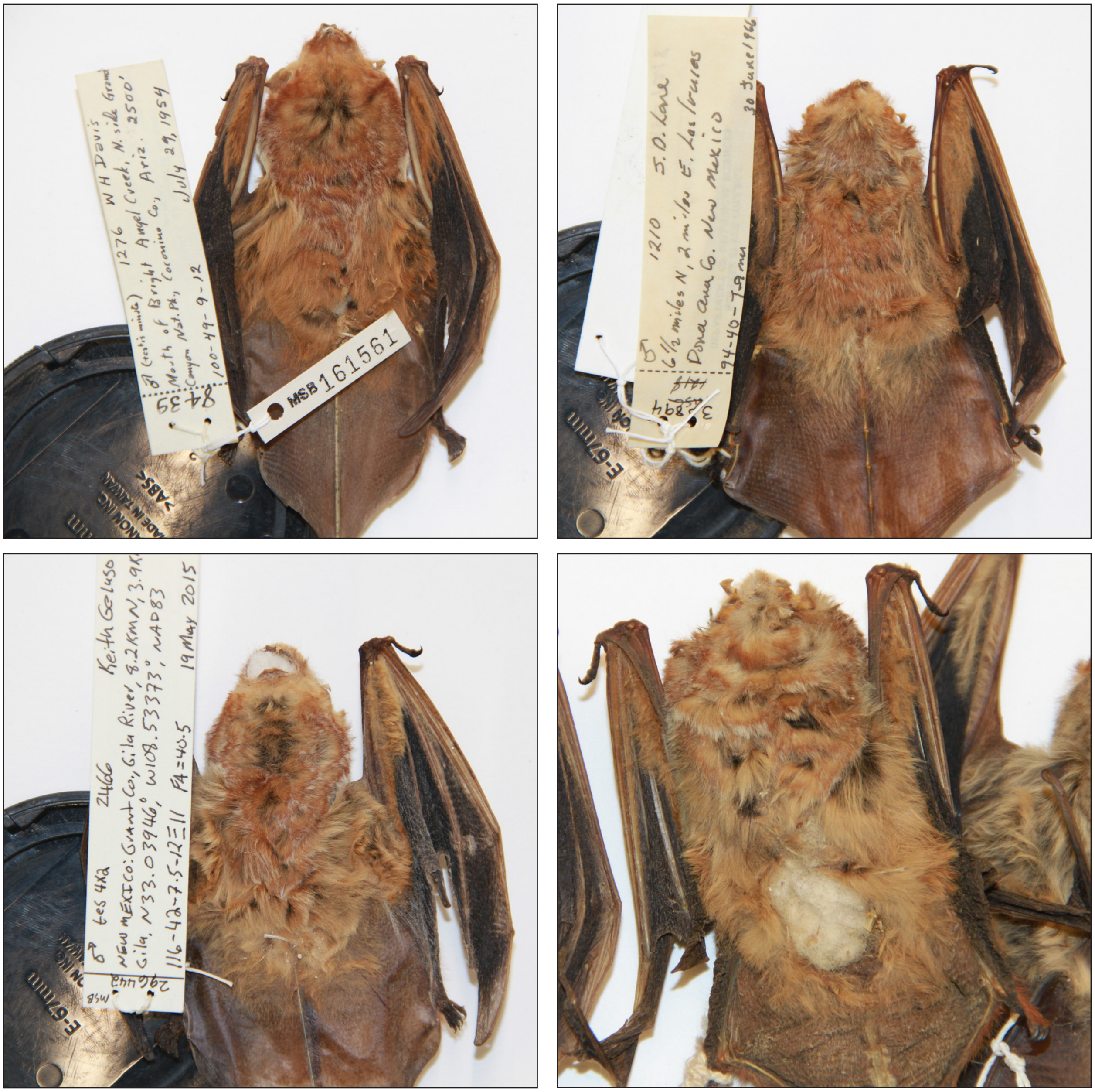

Figure 2. Ventral coloration of Eastern Red Bats (*Lasiurus borealis*) from Arizona, Coconino County (Museum of Southwestern Biology (MSB) #161561, upper left), New Mexico, Doña Ana County (MSB #30894, upper right), New Mexico, Grant County (MSB #296442, bottom left), and Utah, Carbon County (California State University, Long Beach #156, bottom right). All individuals possess a red band of fur on venter.

Figure 3. Ventral appearance of Western Red Bats (*Lasiurus frantzii*) from the Museum of Southwestern Biology demonstrating the dark band of fur below the yellowish to whitish tips of hair. This band of fur is most pronounced on the neck and chest in these two specimens.

tion. Many dichotomous keys suggest and portray that identification is simple with non-overlapping features. However, despite working with many difficult species groups over the years, both authors have been challenged by identification of certain individuals with a number of published keys.

New Mexico specimens.—On 20 May 2015, a male red bat was captured by one of us (KG) along the Gila River, Grant County, New Mexico (MSB 296442; Geluso 2016). Upon capture, the red band of fur on the ventral side was notable. The individual was retained as a voucher specimen because it potentially was an Eastern Red Bat and a record for the area. Several Western Red Bats have been captured along the Gila River in the region, but none with this coloration (K. Geluso, unpublished data). Fur coloration, skull size, and molecular sequence data all support the individual is best referred to as an Eastern Red Bat. Examination of the profile of the skull showed a slight angle. The site along the Gila River represents the first area of known sympatry for the two species in the United States (see Genoways and Baker 1988) and the westernmost record in New Mexico for the Eastern Red Bat.

Findley et al. (1975) first reported a male Eastern Red Bat from 10.5 km N, 3.2 km E Las Cruces, Doña Ana County (MSB 30894) in south-central New Mexico, but Valdez et al. (1999) reported the specimen was best referred to as *L. frantzii* based on small skull measurements. In comparing skull characteristics of only male red bats in our present study, its measurements are within those measured for Eastern Red Bats, albeit on the smaller end of the range of measurements (Table 1). On the basis of fur coloration (red band on fur of ventral side; Fig. 2) and comparatively larger skull measurements, the specimen is best referred to as an Eastern Red Bat. The skull of this specimen does contain an angular profile on its forehead.

Arizona specimen.—The Eastern Red Bat from Coconino County in northern Arizona represents the first Eastern Red Bat documented from Arizona, as Hoffmeister (1986) did not report the species in the state, but this specimen was included in his work (Hoffmeister 1986). The male from the mouth of Bright Angel Creek, N side, Grand Canyon National Park, Coconino County, Arizona, was captured on 29 July 1954. It has a red band of fur on its belly (Fig. 2), a shallow-sloped forehead profile, and large skull characteristics (Table 1). Due to the late July date, the finger bones were examined and determined that the male was an adult, thus there was no sign of a reproducing population in the area. The closest previously published record is located 537 km to the southeast at Bosque del Apache National Wildlife Refuge, Socorro County, New Mexico (MBS 120701; Valdez et al. 1999). This overlooked older specimen of an Eastern

Table 1. Summary of skull and external measurements (mm) for male Eastern Red Bats (*Lasiurus borealis*; n = 5) and male Western Red Bats (*Lasiurus frantzii*; n = 8) used in this study as reference specimens (see Appendix for specimen details), along with measurements of four individuals originally suspected and subsequently confirmed to be Eastern Red Bats from western parts of North America in Arizona, New Mexico, and Utah. GSL represents greatest skull length (not including teeth). Maxillary toothrow was measured from posterior border of upper M3 to anterior border of canine. M3 represents upper last molar and M1 represents upper first molar. Zygomatic breadth represents greatest width across lateral borders of zygomatic processes. Dentary length was measured from posterior border of mandible to anterior border of dentary (not including incisors). Total length of skin and tail length was taken from measurements recorded on skin tag by collector. Forearm length was measured by us from dry study skins. MSB represents the Museum of Southwestern Biology, Albuquerque, New Mexico whereas BYU represents the M. L. Bean Life Science Museum at Brigham Young University, Provo, Utah. NM stands for New Mexico, AZ stands for Arizona, and UT stands for Utah.

	GSL	Maxillary toothrow	Width upper M3	Width upper M1	Zygomatic breadth	Dentary length	Total length skin	Tail length	Forearm length dry
Eastern Red Bats									
Average	12.52	4.44	1.34	1.57	9.28	9.37	102.8	47.2	38.10
Range	11.98–12.98	4.30–4.71	1.18–1.57	1.42–1.78	9.04–9.60	9.31–9.53	97–111	44–53	35.42–39.40
Western Red Bats									
Average	11.69	4.05	1.22	1.45	8.76	8.77	105	46.6	39.01
Range	11.42–11.90	3.92–4.20	1.13–1.29	1.29–1.54	8.52–9.20	8.49–9.11	96–117	43–52	36.30–40.20
Questioned bats									
MSB 296442 (NM)	12.61	4.67	1.48	1.76	9.48	9.97	116	42	39.97
MSB 30894 (NM)	12.00	4.52	1.49	1.74	9.28	9.50	94	40	35.90
MSB 161561 (AZ)	11.99	4.49	1.38	1.51	9.29	9.66	100	49	37.15
BYU 13319 (UT)	12.29	4.27	1.41	1.57	9.05	9.19/9.33[a]	95	44	38.03

[a]Specimen has different lengths for each side of dentary, thus both sides are reported; the larger side has an expanded area of ossified bone possibly representing a prior injury.

Red Bat in Arizona highlights the need to distinguish between these similar species and the importance of taking a voucher specimen to verify identifications in the future. This specimen originally was listed as a Western Red Bat by Hoffmeister (1986).

Utah specimens.—A red bat from Kenilworth Mine in Carbon County represents the first documented record of an Eastern Red Bat in Utah. Due to a missing skull, the individual was identified based solely on the red band of fur on the ventral side (Fig. 2). Hardy (1941) first reported on this individual and another *L. b. teliotis* on 17 September 1937 hanging on the walls of the mine near the entrance. The late date of occurrence suggests that this specimen was a migratory individual. The closest published records are 475 km to the east in Boulder, Boulder County, Colorado (Armstrong et al. 1994) and 360 km to the northeast at Teton Reservoir, Rawlings, Carbon County, Wyoming (Clark and Stromberg 1987).

A red bat captured on 28 October 1991 from Springville in Utah County represents another record of an Eastern Red Bat in Utah. This specimen was first mentioned in the literature by Mollhagen and Bogan (1997). This red bat was identified by the red band of fur on the ventral side and multiple genetic sequence analyses (i.e., tissue samples were used as a positive control for reanalysis of our other samples that failed to yield genetic sequences). This specimen also had large skull characteristics (Table 1). As with the previous record from Utah, the late date of occurrence suggests that this specimen was a migratory individual. The closest published records are 540 km to the east in Boulder, Boulder County, Colorado (Armstrong et al. 1994) and 400 km to the northeast at Teton Reservoir, Rawlings, Carbon County, Wyoming (Clark and Stromberg 1987).

Relatively few red bats are known from Utah, with records documented from north-central parts of the state to southwestern Utah in a north-south band of occurrence (Oliver 2000; Adams 2003). Red bats predictably are known from southwestern Utah in Washington County (Mollhagen and Bogan 1997), and those observations likely represent Western Red Bats. Only four red bats are known from northern Utah, and the three records with dates of observation suggest all were migratory individuals (Oliver 2000). Limited data are presented on the individual captured from Cache County in extreme northern Utah (Oliver 2000). The lack of a voucher specimen for that observation as well as the identification of two red bats in northern Utah as Eastern Red Bats (this study), suggest the observation from Cache County be best referred to as an Eastern Red Bat at this time in terms of mapping the distribution of both species in the United States. This observation likely represents another extralimital record of an Eastern Red Bat rather than a Western Red Bat.

Concluding remarks.—This study increases the known distributional range for Eastern Red Bats in North America. Along the western edge of the Great Plains in recent decades, Eastern Red Bats have expanded their distribution westward, become more abundant, or both (Benedict et al. 2000; Geluso et al. 2013; Geluso and Geluso 2016). Timing of these westernmost records (29 July in Arizona, 17 September in Utah, and 28 October in Utah) agrees with migratory patterns for these bats in the western reaches of the Great Plains where autumn migration commences in late July (Cryan 2003; Geluso et al. 2013; Geluso and Geluso 2016). The capture of an adult, male Eastern Red Bat in western New Mexico during May is noteworthy, and researchers should be prepared for the possibility of this species being present during warmer months throughout the spring and summer. It is also possible that reproductive females might be encountered in this area. Although our sample size was limited, all individuals west of the Rocky Mountains were males, suggesting this sex disperses more than females. Such a trend was not shown in figures portrayed by Cryan (2003). At this time, these records are best referred to as extralimital records because reproductive activities are not known for this species in these areas. Other individuals, both captures and museum vouchers, originally identified as Western Red Bats in western North America likely have been misidentified and represent additional extralimital records of Eastern Red Bats. Museum specimens of Western Red Bats in other museums should be verified in light of our study and verified before including in updated range maps.

The distribution of Western Red Bats in the United States is more restricted than previously portrayed, as our study reduces the known distribution of this species in Utah. Similarly, the re-identification of a Western Red Bat as an Eastern Red Bat in British Columbia, Canada by Nagorsen and Paterson (2012) effectively reduced the northwestern limit of Western Red Bats from southwestern Canada to northern California, as not a single Western Red Bat is known from Oregon or Washington (Verts and Carroway 1998; www.Vertnet.org). Relatively little is understood about Western Red Bats, as certain behaviors and traits reported in the literature still appear to relate to its former association with Eastern Red Bats (e.g., Andersen and Geluso 2018). In 1998, the Western Bat Working Group designated the Western Red Bat with its highest conservation priority as imperiled or at high risk of imperilment throughout the species' distribution in the United States (Adams 2003). Our study continues to demonstrate how little information is known about this species, including something as basic as identifying characters and distribution.

Understanding the distribution of migratory tree bats is important in light of increased mortality rates associated with wind-energy facilities throughout North America (e.g., Johnson et al. 2003; Johnson et al. 2004; Arnett et al. 2008). Papers by Carter et al. (2003) and Frick et al. (2017) highlight the need for conservation efforts of migratory tree bats, as significant population reductions already have been shown or predicted for some species of this bat assemblage. All captures, echolocation calls, and voucher specimens of red bats from west of the Rocky Mountains need to be examined closely in light of our findings. Additional confirmatory studies using genetic analyses, skull characteristics, and our newly described difference in fur coloration should be conducted with individuals of these species observed dead under wind turbines during late summer and autumn throughout regions where they occur.

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APPENDIX

Specimens of five male Eastern Red Bats (*Lasiurus borealis*) and eight male Western Red Bats (*Lasiurus frantzii*) housed at the Museum of Southwestern Biology (MSB). Various skull and skin characteristics were measured as a reference for the four red bat specimens with skull vouchers in which identification was in question (see Table 1).

Lasiurus borealis (5).—NEBRASKA: Thomas Co. (MSB 124453), Scotts Bluff Co. (MSB 124288); NEW YORK: Nassau Co. (MSB 31459); NEW MEXICO: Eddy Co. (MSB 68581, 125032).

Lasiurus frantzii (8).—ARIZONA: Gila Co. (MSB 161562); NEW MEXICO: Catron Co. (MSB 125021), Grant Co. (MSB 296437, 296449), Hidalgo Co. (MSB 19547, 42502, 126652), and Luna Co. (MSB 296518).

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